1. Go to one of the Unix Workstations in Science 407 and login to the machine pegasus.cs.csubit.edu.

2. Remember for any command that you can get the full syntax information by typing
   `man [section] <command name> <cr>`
   If you use the section number on a Sun machine you will have to precede it by “-s”
   `man [-s section] <command name> <cr>`
   You can also search manual pages for a keyword by typing
   `man -k <keyword> <cr>`

3. If you already use pine as a mailer and like it, fine. Sometimes the Berkeley mailer is
   faster for short messages. To use this type
   `mailx <username> <cr>`
   fill in the “Subject:”, type the message, ending with CTRL-D, fill in the “CC:” (or just hit
   Return). If you get stuck in mail type two CTRL-C’s in a row. If mail is not giving you
   all these options you may not have an up to date .mailrc file in your HOME directory.
   Copy the latest version via
   `cd < cr >`
   `cp /usr/skel/.mailrc . < cr >`
   Read your mail by just typing `mailx` with no arguments. To see a list of available options,
   type `.`. You can exit `mailx` with “x” in which case nothing has been changed or with “q”
   in which case messages you read have been moved to `mbox` in your HOME directory. You
   can read these saved messages via
   `mailx -f mbox < cr >`

4. Check network status by using the `/usr/sbin/netstat` command with options `-i`
   (interface(s)), `-s` (statistics), `-r` (for route info), and `-a` (all protocol sessions/connections).
   You may want to pipe the output through `more` or `grep` if it overflows the screen. Note
   that symbolic domain and host-domainnames are primarily for user convenience. Use the
   `-n` option with the above for numeric ip-addresses (and faster displays). All routing on
   the Internet is based upon the actual 32-bit numeric ip-address.

5. Try “pinging” another host with the command `/usr/sbin/ping` to see if its interface is
   active. ping sends an ICMP message. Look in the file `/etc/protocols` to see the Internet
   (transport) protocols supported on the system. To find the hardware (ethernet) address
   of a local machine, say academic.csubit.edu, ping it and then type
   `/usr/sbin/arp -a | grep academic < cr >`
   arp stands for Address Resolution Protocol (ARP) and is a mechanism we will cover
   later which is used in resolving internet addresses to hardware addresses. Look in the file
   `/etc/services` to see the service transport protocols and port numbers supported on the
   system.

6. Try using `dig` to find who has the Start of Authority (SOA) over the 136.168.0.0 class
   B subnet by typing
   `dig 168.136.in-addr.arpa soa < cr >`
   Note the reverse order of numbers and the ”in-addr.arpa” This is part of the Domain Name
   Services (DNS) syntax. Note that ns1.csubit.net is the CSU “parent” nameserver. Do the
   same for the computer science 136.168.201.0 subnet.
7. Try finding technical and administrative contacts with the “whois” service by typing
whois -h whois.arin.net csubak < cr >
whois -h whois.arin.net 136.168.0.0 < cr >

8. Try using dig with the ptr option to find the canonical symbolic host-domainname from the numeric ip-address. This is actually causing a recursive lookup for a PTR record in the hosts.rev file on the responsible name server. For example you could type either of the following
dig 27.10.168.136.in-addr.arpa ptr < cr >
dig -x 136.168.10.27 < cr >
The “-x” option on dig automatically converts the 136.168.10.27 form to the “in-addr.arpa ptr” form to save you some typing.

9. Try using dig to do lookups using the symbolic domain and host-domainname to find mailexchangers (MX) and nameservers (NS), for example
dig csubak.edu ns < cr >
dig csubak.edu mx < cr >
dig cs.csubak.edu ns < cr >
dig cs.csubak.edu mx < cr >
or just find the ip-address from a symbolic host-domainname (this is the so-called A record in the file hosts.db)
dig academic.csubak.edu a < cr >
but you don’t have to type the “a” since dig defaults to this.

10. When you have an account on both helios and pegasus make sure that you can use
telnet from the command line between your accounts on these hosts. Use the telnet ESCape of CTRL-] to go to command mode and type “help”. Try some of the options out like mode line and mode character.

11. When you have an account on both helios and pegasus make sure that you can use ftp from the command line between your accounts on these hosts. Note that ftp supports the following commands:

    binary (enter binary transfer mode)
    ascii (enter ascii transfer mode)
    prompt off (don’t ask me just do the damn transfer)
    cd <directory> (change current directory on remote host)
    pwd (display current directory on remote host)
    lcd <directory> (change current directory on local host)
    !pwd (display current directory on local host)
    !<command> (spawn subshell and execute command on local host)
    get <filename> (get a file from remote host)
    mget <filename> (get all files matching wildcard)
    put <filename> (put a file to remote host)
    mput <filename> (put all files matching wildcard to remote host)
    quit (exit from ftp)